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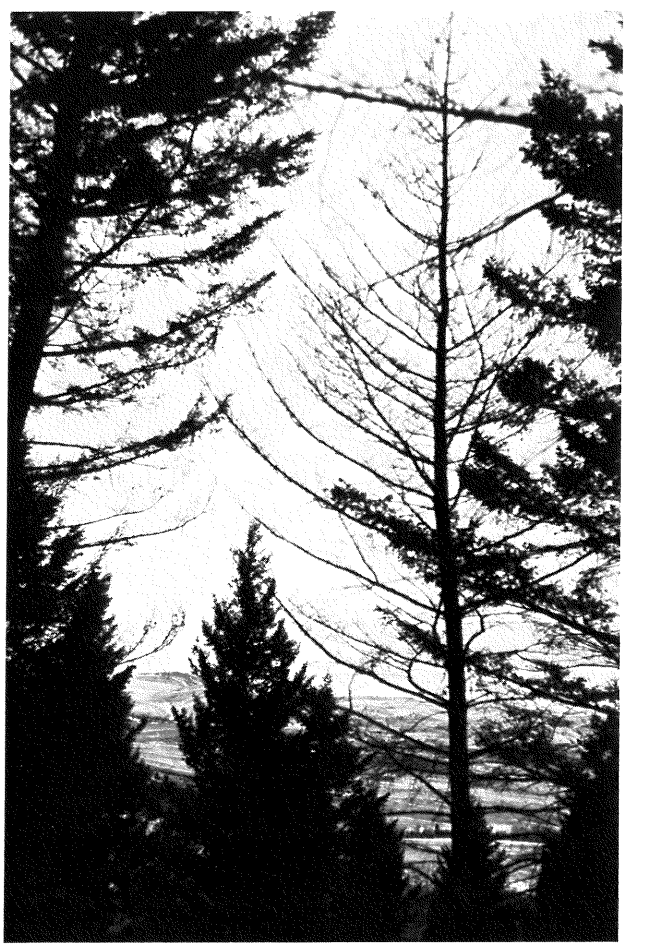
Spruce Budworm and Elk: Can They Live Together?

How can the western spruce budworm, an insect pest of forests in the West, affect elk? That is the question Dr. Benjamin A. Zamora, associate professor at Washington State University, Department of Forestry and Range Management, is trying to answer with a study of the winter range used by elk in the Beaverhead National Forest of Montana.

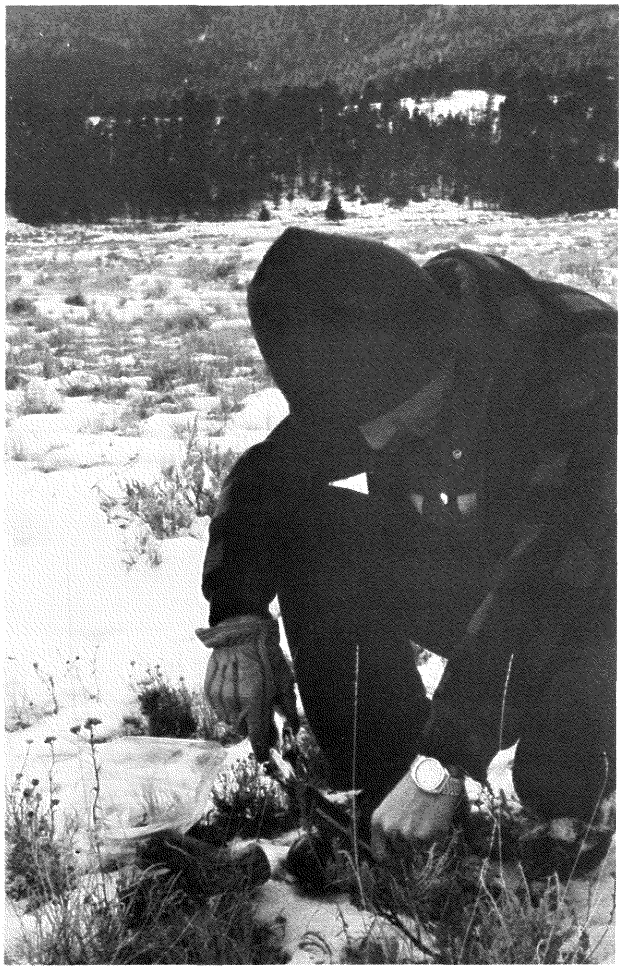
Protective cover from the icy winds sweeping up the Madison Valley is considered essential to the health of elk herds. Under extreme conditions, protective cover can mean life or death. The amount of protection the animals have determines the amount of food they must eat to maintain body heat. If animals can't make up for a loss of protective cover by eating more, the increased stress will show up in the number of healthy calves born in the spring. If the stress becomes too great the elk may die from exposure.



Trees damaged by budworms are considered poor protection from the elements for elk herds overwintering in the Madison Valley.

Foresters and wildlife biologists think budworm defoliation reduces the thermal protection offered by stands within critical winter range for elk. The thin crowns of heavily defoliated trees are poor protection from wind; they permit rapid loss of heat from the animals.

The purpose of this study is to determine the importance of thermal protection to survival of elk in the Madison Valley. Dr. Zamora, with the help of Dr. Edward Dealy, plant ecologist at the Range and Wildlife Habitat Laboratory of the Pacific Northwest Forest and Range Experiment Station (who supplied the meteorological monitoring equipment), will record weather conditions in heavily defoliated stands, nondefoliated stands, and open range to see if damaged trees afford enough protection to maintain a healthy population of elk. Dr. Zamora, with help from Madison Ranger District personnel, will check the composition of the elks' diet throughout the winter to determine caloric intake. Data on weather conditions and diet will be fed into computer models to see if the diet is adequate for pregnant cows to bear healthy calves under the weather conditions in budworm-damaged forests.



Strong, frigid winds sweeping up the Madison Valley cause high loss of body heat in exposed elk. Here, Dr. Zamora collects samples of browse for laboratory analysis. Del Destain, graduate student at Washington State University, collects grasses elk are likely to eat.

Weather monitoring instruments are set in damaged and undamaged stands and in open areas adjacent to stands heavily used by elk.

Wayne Williams, Range Technician, and Janet Bean-Dochnal and Nancy Felblinger, Range Conservationists, Madison Ranger District, check recording instruments.

A "fish eye" lens helps quantify the condition of the forest canopy.

Results of this study, which is being funded by the Canada/United States Spruce Budworms Program-West, will give wildlife biologists and range managers a better understanding of critical elements in the winter habitat of elk. In turn, this will help them make better decisions in selecting appropriate management alternatives.